

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A fuel cell system comprising:
a fuel cell stack having a plurality of fuel cells connected in series;
a fuel supply device configured to supply fuel to each fuel cell of said fuel cells in said fuel cell stack based on a fuel supply amount which is a target value;
an air supply device configured to supply air to each said fuel cell based on an air supply amount which is a target value; and
a controller configured to determine ~~the~~ a total fuel supply amount and ~~the~~ a total air supply amount based on power required by a load device ~~and a voltage of each said fuel cell~~;
wherein said controller is configured to set at least one of the fuel supply amount and the air supply amount for each said fuel cell based on the voltage of each said fuel cell so that a voltage variation of each said fuel cell is minimized,
wherein at least one of said fuel supply device supplies fuel to each said fuel cell based on the fuel supply amount of each said fuel cell, and said air supply device supplies air to each said fuel cell based on the air supply amount of each said fuel cell, and
wherein said controller is configured to calculate a voltage deviation for each said fuel cell, for each said fuel cell, the voltage deviation being a difference between a voltage of said fuel cell and an average value of the voltages of said plurality of fuel cells at each predetermined time of a plurality of predetermined times, and configured to increase or decrease the fuel supply amount of each said fuel cell according to the voltage deviation of each said fuel cell while ~~keeping a total fuel supply amount unchanged~~ conforming a sum of the fuel supply amounts of said plurality of fuel cells to the total fuel supply amount according to the required power of the load device and/or increase or decrease the air supply amount of each said fuel cell according to the voltage deviation of each said fuel cell while ~~keeping a total air supply amount unchanged~~ conforming a sum of the air supply amounts of said plurality of fuel cells to the total air supply amount according to the required power of the load device.

2. (Canceled)

3. (Previously Presented) The fuel cell system according to claim 1, further comprising a temperature measuring device configured to measure a temperature of said fuel cell stack,

wherein said controller has a total fuel supply amount table for calculating the total fuel supply amount and/or a total air supply amount table for calculating the total air supply amount based on the temperature of said fuel cell stack and the required power of the load device, wherein

said controller is configured to receive the temperature of said fuel cell stack from said temperature measuring device and the required power from the load device, and is configured to calculate at least one of the total fuel supply amount and the total air supply amount based on at least one of the total fuel supply amount table and the total air supply amount table, and is configured to set an amount which is obtained by dividing at least one of the total fuel supply amount and the total air supply amount by the total number of the fuel cells to an initial value of at least one of the fuel supply amount and the air supply amount of each said fuel cell, and

said controller is configured to repeat, at each predetermined time of the plurality of predetermined times, calculating the voltage deviation for each said fuel cell, and obtaining at least one of the target fuel supply amount and the target air supply amount by subtracting a value obtained by multiplying the voltage deviation by a predetermined value, from at least one of the fuel supply amount and the air supply amount of each said fuel cell.

4. (Previously Presented) The fuel cell system according to claim 1, wherein

when a maximum value of absolute values of the voltage deviations of said plurality of fuel cells becomes smaller than a predetermined value, said controller is configured to calculate a generated power of said fuel cell stack within a predetermined time, and increase or decrease a total fuel supply amount or a total air supply amount according to a power difference between the generated power and the required power from the load device.

5. (Previously Presented) The fuel cell system according to claim 4, wherein the total fuel supply amount or the total air supply amount is increased or decreased by adding a value obtained by multiplying the power difference between the generated power of said fuel cell stack and the required power of the load device by a predetermined value, to the total fuel supply amount or the total air supply amount.

6. (Previously Presented) The fuel cell system according to claim 1, further comprising a power converter configured to control a voltage or current of said fuel cell stack so that the voltage or current of said fuel cell stack is equivalent to a target voltage or target current determined by said controller, and is configured to supply a power outputted from said fuel cell stack to the load device, wherein

when a minimum voltage value of the voltages of said plurality of fuel cells is smaller than a predetermined voltage value, said controller increases the target voltage to cause said power converter to increase the voltage of said fuel cell stack, or said controller decreases the target current to cause said power converter to decrease the current of said fuel cell stack.

7. (Previously Presented) The fuel cell system according to claim 6, wherein when the minimum value of the voltages of said plurality of fuel cells is smaller than the predetermined voltage value,

said controller adds a value obtained by multiplying a voltage difference between the minimum voltage value and the predetermined voltage value by a predetermined value, to the target voltage and said power converter increases the voltage of said fuel cell stack based on the target voltage, or

said controller subtracts a value obtained by multiplying the voltage difference between the minimum voltage value and the predetermined voltage value by a predetermined value from the target current and said power converter decreases the current of said fuel cell stack based on the target current.